Preventative Maintenance document for all Unimark, IER and Genicom ATB2 products currently used by Worldspan in EMEA

This documentation contains confidential information proprietary to Worldspan

Prepared by Michael Merhej
May 26th 2005

Unimark

Unimark XP

Periodic Inspection

Every One-month or every 5000 coupons (more often in high-volume applications), inspect the Unit for unusual wear or damage to components. The inspection will take less than 10 minutes.

- Carefully inspect the outer surfaces of the Unit's **enclosure** for signs of excessive internal heat buildup. Visual evidence of excessive internal heat buildup may be confirmed by observation of discoloration or warping of the covers surrounding the electronic components.
- **Examine the Unit's external and internal surfaces, ventilation slots, transport mechanism, and exposed components for dust buildup. All dust should be removed at least every month to maintain performance.**

If cleaning is required, complete the recommended cleaning procedures listed in the following sections.

Using the Cleaning Card

The Cleaning Card is saturated in a 99% Isopropyl Alcohol cleaning solution, and has been designed to be fed through the transport mechanism and clean the print head, print head platen, and encoder drive wheels.

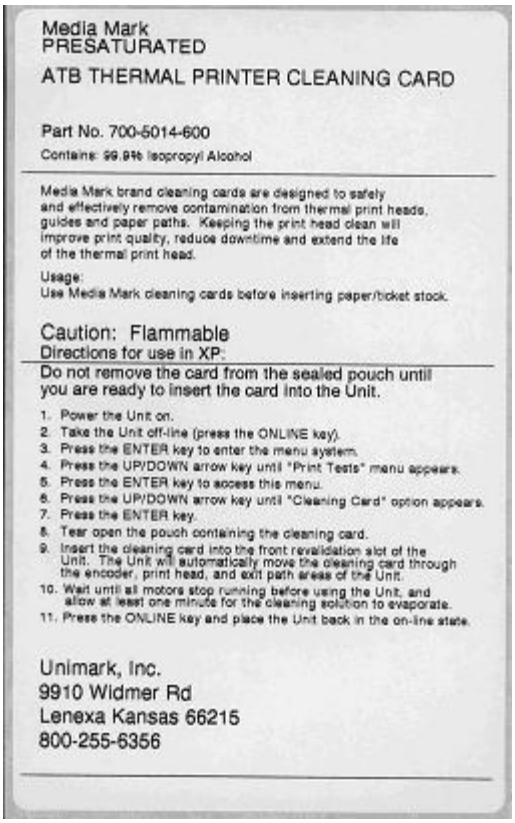
Cleanings cards are available from Unimark by calling local customer service. The part number for the cleaning card is 700-5014-600 (single), or the card may be ordered as a kit of five (-605K), twenty-five (-625K), etc.

Do not remove the card from the sealed pouch until you are ready to insert the card into the Unit.

To use the cleaning card:

- Power the Unit on.
- Take the Unit off-line (press the ONLINE key).
- Press the ENTER key to enter the menu system.
- Press the UP/DOWN arrow key until the "Print Tests" menu appears.
- Press the ENTER key to access this menu.
- Press the UP/DOWN arrow key until the "Cleaning Card" option appears.
- Press the ENTER key.
- Tear open the pouch containing the cleaning card.

- Insert the cleaning card into the front revalidation slot of the Unit. The Unit will automatically move the cleaning card through the encoder, print head, and exit path areas of the Unit.
- Wait until all motors stop running before using the Unit, and allow at least one minute for the cleaning solution to evaporate. Press the ONLINE key and place the Unit back in the on-line state


Media Mark
PRESATURATED
ATB THERMAL PRINTER CLEANING CARD
Part No. 700-5014-600
Contains: 99.9% Isopropyl Alcohol
Media Mark brand cleaning cards are designed to safely and effectively remove contamination from thermal print heads, guides and paper paths. Keeping the print head clean will improve print quality, reduce downtime and extend the life of the thermal print head.
Usage:
Use Media Mark cleaning cards before inserting paper/ticket stock.
Caution: Flammable
Directions for use in XP:
Do not remove the card from the sealed pouch until you are ready to insert the card into the Unit.
1. Power the Unit on.
2. Take the Unit off-line (press the ONLINE key).
3. Press the ENTER key to enter the menu system.
4. Press the UP/DOWN arrow key until "Print Tests" menu appears.
5. Press the ENTER key to access this menu.
6. Press the UP/DOWN arrow key until "Cleaning Card" option appears.
7. Press the ENTER key.
8. Tear open the pouch containing the cleaning card.
9. Insert the cleaning card into the front revalidation slot of the Unit. The Unit will automatically move the cleaning card through the encoder, print head, and exit path areas of the Unit.
10. Wait until all motors stop running before using the Unit, and allow at least one minute for the cleaning solution to evaporate.
11. Press the ONLINE key and place the Unit back in the on-line state.
Unimark, Inc.
9910 Widmer Rd
Lenexa Kansas 66215
800-255-6356

Unimark XP Cleaning Card

Summary

<u>The cleaning coupon should be ran approximately every 5,000 coupons or when print becomes lighter on both the XP and the Sprite.</u>

The cleaning coupon is the same for both the XP and Sprite. The cleaning coupons cost $1 USD per coupon or £1 GBP

In addition to the cleaning coupon, both Customers and service providers alike needs to be aware that Periodic compressed air should be used on the printers cleaning out any residue from tickets.

The Unimark XP printhead is covered under warranty up to 1 million inches (125,000 coupons).

Both the XP and Sprite ATB2 Printers will be shipped with 4 cleaning coupons each.

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Preventive Maintenance Unimark Sprite

This section describes the preventive maintenance procedures for the SPRITE. Although the SPRITE will perform dependably right out of the box, the operator must do a periodic inspection and cleaning to keep it in good working order. With proper care, the SPRITE enclosure, print head, magnetic encoder (when so equipped), transport assembly, and other components can be expected to continue to provide good service for many years. The following inspection and cleaning procedures are presented separately for clarity, but may be performed at the same time.

Periodic Inspection and Cleaning

Like any piece of office equipment, the SPRITE ATB printer will need periodic maintenance. **Every three months or 12,000 coupons**, the printer should be cleaned and visually inspected. This process should take no more than ten minutes.

Examine the enclosure's external and internal surfaces, ventilation slots, transport assembly, and internal components for dust buildup. All dust should be removed at least every three months to maintain performance.

- Vacuum dust accumulation from the ventilation slots and other external surfaces of the SPRITE.
- Dampen a soft cloth or paper towel with a mild solution of soap and water or a mild commercial cleaner and wipe the surface.
- Dry the cleaned area with a clean, dry cloth or paper towel.
- Dust is primarily produced by ticket stock passing through the transport assembly inside the SPRITE enclosure. Clean the internal surfaces of the enclosure as follows:
- Toggle the POWER switch to 0 (OFF).
- Unplug power cord from back of the enclosure
- Unlock door on left side of enclosure and open to a maximum of 90º.
- Remove all card stock from enclosure by rotating knurled knobs along transport path as required.
- Vacuum as much dust as possible from inside enclosure.
- Use compressed air to blow dust from ticket stock path grooves in transport assembly.

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Using a SPRITE Cleaning Card

A cleaning card is available for the SPRITE, which will clean the print head and the entire paper path via a menu selection. To use the cleaning card (**P/N 700-5014-200)** follow these instructions:

- Press ONLINE/ENTER key to take the printer to Offline/Menu.
- Press the up or down arrow keys to access MENU PRINT. Press ONLINE/ENTER key.
- Press the up or down arrow keys to access PRINT CLEAN. Press ONLINE/ENTER key.
- The display will scroll to alert the operator to REMOVE ALL STOCK FROM INPUT AND EXIT BINS.
- Once the stock has been removed, the display will scroll INSERT CLEANING CARD IN EITHER BIN.
- Upon inserting the pre-saturated cleaning card, the coupon will move back and forth three times over the print head and the magnetic read/write heads while the display scrolls CLEANING IN PROGRESS. The operator will hear the drive rollers inside the printer spin dry for about 10 seconds after each pass.
- The cleaning card will exit into the front ticket bin when the cleaning cycle is complete. Properly dispose of used cleaning card.
- Press EXIT/RESET three times to return to Offline/Menu, and then press ONLINE/ENTER to return to Online.

The IER 557 Series Printer Cabinet and built in models (C, D, E and F) are designed for high volume applications. To maintain optimum performance of these printers and to reduce the risk of failure it is important to follow the recommended preventive and periodic maintenance schedules indicated below;

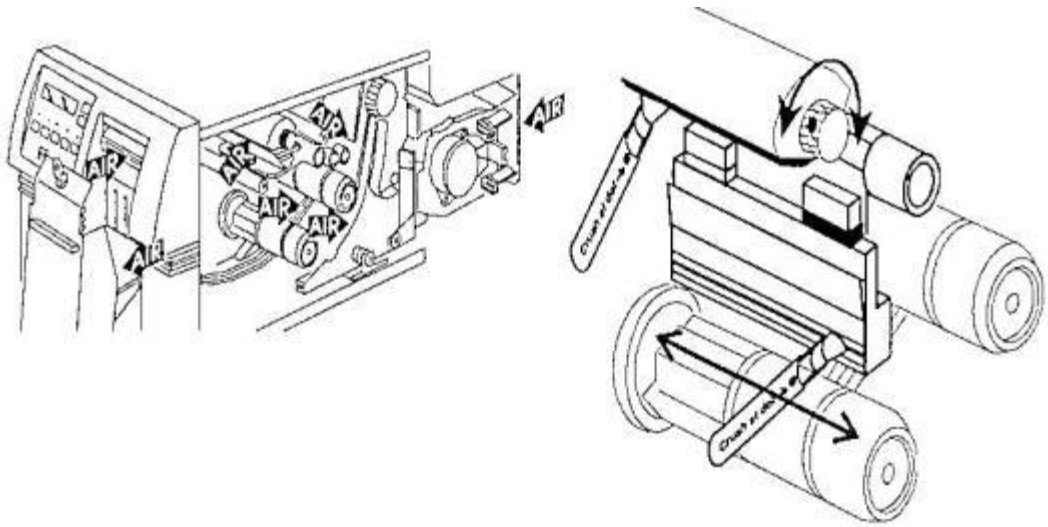
1. Periodic maintenance every 8,000 documents
2. Level 1 preventive maintenance every 80,000 documents
3. Level 2 preventive maintenance once a year

Use Cleaning coupon and Air Canister to clear paper dust from the enclave of the unit. Use a cleaning coupon regularly to avoid build up of dust which will assist in the build up of static charge causing the unit to Jam or fail.

Periodic Printer Maintenance (The printer is installed in the cabinet and switched on)

Personnel	Maintenance Schedule	Estimated Time
Operator	Every 8000 documents	15 minutes

Type of Operations to be Performed	Cleaning Products to be used
Cleaning the Printhead	Cleaning Kit, IER P/N PL21709
Removing dust from the printer interior	Printhead Cleaning Kit, IER P/N S31381A



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M.T.B.F. (Mean Time Between Failures)

The MTBF of the IER Printer has been estimated at 8 500 hours under the following conditions: 24 h/24 h powered-up, 365 days/year and 575 coupons printed daily under normal operating conditions that are:

- **Temperature** + 5°C to + 40°C (41°F to 104°F)
- **Relative humidity** 20 % to 80 % without condensation
- **AC power supply** 90 V eff / 132 V eff187 V eff / 264 V eff
- **Frequency** 50Hz or 60Hz

- Any document used for printing and magnetic encoding (on magnetic stripe) must comply with IATA standard 722 c and 722 e. IER has already approved several types of correct thermal media. This list is not restrictive, but we, nevertheless strongly recommend that you submit samples of media you are planning to use for analysis in order to obtain approval.

SERVICE LIFE OF THE THERMAL PRINTHEAD

The service life of the thermal printhead is determined by the number of heating cycles performed by each micro resistor. The theoretical limit is 100 million cycles on any one micro resistor or 50 kms of paper (with no pre cut area).

SERVICE LIFE OF THE MAGNETIC HEAD(S)

The service life of the magnetic head(s) is conditioned by abrasion due to the passage of documents over the head(s). The limit is 1.000.000 passes, after which damage of the head(s) can be expected, leading to encoding or reading errors. Depending on the application (front-end insertion or continuous feed), the number of passes for a given document over the magnetic head(s) can be used to evaluate the service life in terms of number of documents.

Service time of both thermal printhead(s) and magnetic head(s) may vary depending on factors such as:

- The environment (standard, dusty, humid, hot, cold...)
- The quality of the paper
- The amount and the density of the preprinted text and graphics
- The quality of the ink used for the pre-printing
- The surface and the location of the pre-printing (logo...)

Periodic cleaning

Calls for no particular technical knowledge and may be carried out by the operator.

OPERATION	PERIODICITY
Periodic cleaning • Cleaning of Thermal Printhead • Dusting paper guide and sensors	Every 8 000 to 30 000 documents depending upon the quality of the paper media, when used in Direct Thermal Mode.

These operations should be carried out more frequently in particularly harsh environments (dust, humidity).

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GENERAL PRINTER CLEANING

- Use the cleaning kit dust-remover spray and remove dust from the front insertion slot, stacker, and rear feeders.
- Open the left-side door and swing open the hinged top cover.
- Use the cleaning kit dust remover spray and remove dust from the inside of the printer (paper path, mechanical assembly, and sensors).

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Texas Instruments TI 1600 GENICOM

In order to maintain optimum print quality, a few adjustments and/or maintenance procedures may be required, such as:

Cleaning the Thermal Printhead

To maintain print quality the Thermal Printhead should be cleaned, depending upon the coupon stock used, after printing approximately 20,000 coupons or when the print quality begins to degrade. A Printhead Cleaning kit - P/N 2647868-0001 or -0002 which includes head-cleaning coupons impregnated with alcohol is required.

To clean the printhead, complete the following steps:

1. Press the **Supplies** key and the LCD displays **Supplies Status**.
2. Press **Previous** until the display shows **Clean Printhead**.
3. Press **Select**. The LCD prompts you to insert the cleaning coupon.
4. Insert the cleaning coupon into the manual feed slot. The coupon is drawn into the printer and will be moved under the Printhead. The coupon is then deposited in the front bin.
5. After the Printhead is cleaned, a 60 second drying cycle begins to remove all the alcohol residue.
6. When the drying cycle is complete, the printer returns to Ready/Idle.

Notes:
Do not open the head-cleaning coupon until ready for use.
Do not use a head-cleaning coupon that has dried out.
Be careful not to bend or crimp the edges of the coupon

NOTE: THE PRINTHEAD IS EXTREMELY STATIC SENSITIVE. USE CAUTION!

The Thermal Printhead should be replaced if:

- It has been cleaned and the print quality has degraded to an unacceptable level.
- It has reached its life expectancy of 150,000 coupons for average to high sensitivity direct thermal stock on the ATB1600 Printer.

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